laser element having an emission wavelength higher than the emission wavelength of said first semiconductor laser element and a temperature dependence lower than the temperature dependence of said first semiconductor laser element so that power of the second semiconductor laser element is less affected by a given change in temperature than power of the first semiconductor laser element which is closer to the mount.

11. (*Unamended*) A semiconductor laser device comprising:

a stem including a mounting surface;

a first semiconductor laser element directly or indirectly mounted on the mounting surface of said stem, said first semiconductor laser element having an emission wavelength in a range of 640-660 nm; and

a second semiconductor laser element disposed on top of said first semiconductor laser element and having an emission wavelength in a range of 770-800 nm.

REMARKS

This is in response to the Office Action dated February 12, 2003. Claims 1-12 are pending. No claims have been changed herein.

For purposes of example and without limitation, certain example embodiments of this invention relate to a semiconductor laser device including first and second laser elements that have different emission wavelengths. Fig. 4, for example, illustrates a submount 20 that supports both a first laser element 30 (e.g., emission wavelength from 640-660 nm) and a second laser element 40 (e.g., emission wavelength from 770-800

nm). Laser element 40 has a *lower/smaller temperature dependency* than laser element 30. In other words, the power of laser element 40 is less affected by a given change in temperature (e.g., a temperature change of from 25 to 50 degrees C, or a change from 60 to 70 degrees C) than is laser element 30 - compare Fig. 5 (large temperature dependency) to Fig. 6 (smaller temperature dependency). *An important feature of certain example embodiments of this invention is to locate the laser element having the lessor temperature dependency further from the mounting surface than the laser element with the larger temperature dependency* (and thus locating the laser element with the larger temperature dependency closer to the mounting surface). As explained on pages 3-4 of the instant specification, this is particularly advantageous in that it allows heat generated by the first laser element to be disposed closer to the mounting surface and thus be easily dissipated through electrode 25, while the harder to dissipate heat generated by the second laser element is dissipated via smaller electrode 35 and wire 36. Thus, it is advantageous to locate the laser element less susceptible to heat problems in an upper position farther from the mounting surface of the stem or the like.

<u>Claim 1</u>

Claim 1 stands rejected under 35 U.S.C. Section 102(b) as being allegedly anticipated by Kato (US 4,901,325). This Section 102(b) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires "a second semiconductor laser element disposed on *top* of said first semiconductor laser element, said second semiconductor laser element having an emission wavelength different from the emission wavelength of said first semiconductor laser element and a temperature dependence *lower* than the temperature dependence of said first semiconductor laser element." In other words, claim 1 requires that the *laser element having the lessor temperature dependency is located further from the mounting surface than the laser element with the larger temperature dependency* (and thus the laser element with the larger temperature dependency is closer to the mounting surface). For example, see Fig. 4 of the instant application which illustrates that the laser element 40 having the lessor/smaller temperature dependency is located further from the mounting surface than the laser element 30 with the larger temperature dependency. The cited art fails to disclose or suggest the aforesaid aspect of claim 1.

Kato in Fig. 5 discloses first laser chip 44 and second laser chip 43 supported on a mounting surface of mount 52. The particular wavelengths of the laser chips for this embodiment are not mentioned in the reference. However, Kato clearly fails to disclose or suggest locating a laser element with a lessor temperature dependency farther from the mount than a laser element with a high temperature dependency as required by claim 1. There is nothing in Kato which states or suggests that chip 43 has a lessor temperature dependency than chip 44. Claim 1 cannot possibly be anticipated or otherwise rendered unpatentable by Kato.

Furthermore, in the Final Office Action, the Examiner's apparent contention that laser chips 43 and 44 in Fig. 5 of Kato operate at 780 nm and 830 nm, respectively, is

incorrect. There is nothing in Kato which supports the Examiner's allegation that laser chips 43 and 44 in Kato operate at 780 and 830 nm, respectively. The discussion in Kato at col. 11, lines 13-17, relates to laser chips 38 and 39 – not laser chips 43 and 44.

Additionally, in the Final Office Action the Examiner appears to contend that a laser chip operating at an emission wavelength of 780 nm *inherently* has a lessor temperature dependency than a laser chip operating at an emission wavelength of 830 nm. Again, this apparent contention by the Examiner is incorrect. Typically, a 780 nm-band semiconductor laser has a larger (not smaller/lessor) temperature dependency than a 830 nm-band semiconductor laser of the same material with only molar fractions of elements being different. Thus, even the Examiner's contention about temperature dependencies of respective laser elements is wrong. The entire basis of the Final Rejection lacks merit and is fundamentally flawed.

Claim 7

Claim 7 requires that "said plurality of *semiconductor laser elements are stacked in order of temperature dependence such that the laser chip farther from the mounting surface of the stem has a lower temperature dependence than the laser chip closer to the mounting surface of the stem.*" Again, Kato fails to disclose or suggest this aspect of claim 7. Kato is entirely unrelated to this aspect of claim 7.

Claim 10

Claim 10 requires "a second semiconductor laser element disposed at least partially over said first semiconductor laser element . . . . second semiconductor laser element having an emission wavelength higher than the emission wavelength of said first

semiconductor laser element and *a temperature dependence lower* than the temperature dependence of said first semiconductor laser element so that *power of the second semiconductor laser element is less affected by a given change in temperature than power of the first semiconductor laser element which is closer to the mount.*" Again, Kato fails to disclose or suggest this aspect of claim 10.

<u>Claim 11</u>

Claim 11 requires "a first semiconductor laser element directly or indirectly mounted on the mounting surface of said stem, said first semiconductor laser element having an emission wavelength in a range of <u>640-660 nm</u>; and a second semiconductor laser element disposed <u>on top of</u> said first semiconductor laser element and having an emission wavelength in a range of <u>770-800 nm</u>." In other words, claim 11 requires that a laser element having an emission wavelength in the range of from 770-800 nm be located over top of a laser element having an emission wavelength of 640-660 nm. Kato fails to disclose or suggest this aspect of claim 11.

Still referring to claim 11, the Office Action apparently alleges that in Kato laser element 43 has an emission wavelength of 780 nm and laser element 44 has an emission wavelength of 830 nm. First of all, even if this were the case, the invention of claim 11 would not be met since these emission wavelengths do not fall within the claimed ranges. Second, the Office Action's interpretation of Kato is wrong in this respect as explained above. In particular, it is laser elements 38 and 39 (see Fig. 4) that have emission wavelengths of 780 and 830 nm (not elements 43, 44). Laser elements 38, 39 are not laid on top of one another over a mounting surface in Fig. 4 of Kato. Nothing in Kato

suggests locating semiconductor laser elements with the wavelengths required by claim 11 on top of one another in the order recited in this claim.

Citation to Fisli cannot cure the fundamental flaws of Kato described above with respect to claim 11. While Fisli discloses laser beams of 645, 755, 695, and 825 nm, none of these fall within the claimed range of 770-800 nm required by claim 11. Moreover, there is no suggestion in Fisli of placing a laser element in the range of 770-800 nm over top of a laser element having an emission wavelength in the range of 640-660 nm as required by claim 11.

Conclusion

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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